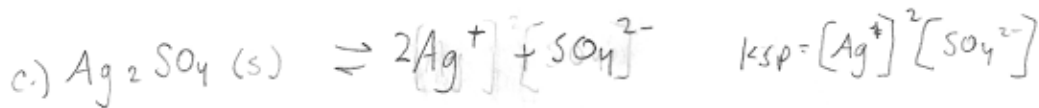
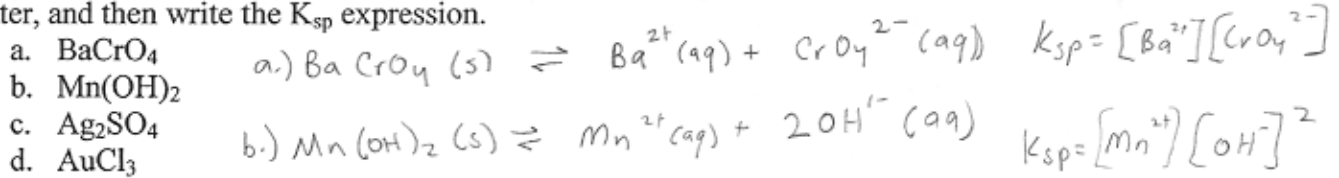


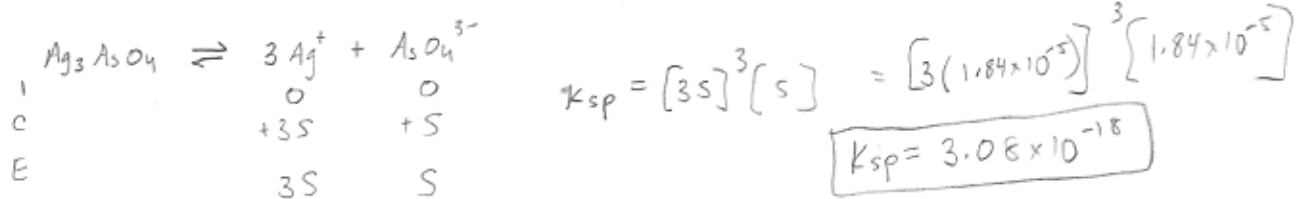
Chapter 17: Additional Aqueous equilibria

1. Write a balanced chemical equation for the equilibrium when these slightly soluble salts are added to water, and then write the K_{sp} expression.

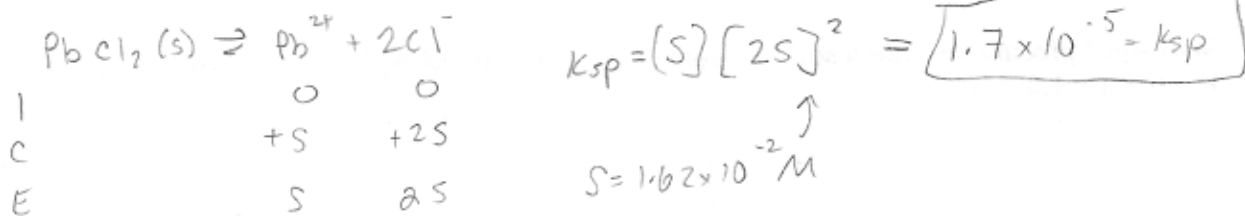


2. A saturated solution of silver arsenate (Ag_3AsO_4) contains 8.5×10^{-6} g Ag_3AsO_4 per mL. Calculate the K_{sp} of silver arsenate. Assume no other reactions other than K_{sp} reaction.

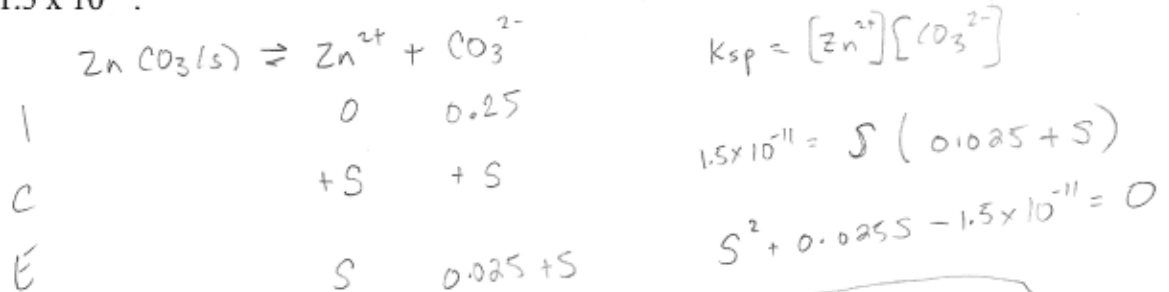
$$\int = \frac{8.5 \times 10^{-6} \text{ g Ag}_3\text{AsO}_4}{1 \text{ mL}} \times \frac{1000 \text{ mL}}{\text{L}} \times \frac{\text{mol}}{462.52 \text{ g Ag}_3\text{AsO}_4} = 1.84 \times 10^{-5} \text{ M}$$



3. The solubility of lead (II) chloride in water is 1.62×10^{-2} M. Calculate the K_{sp} , assuming no other reaction.

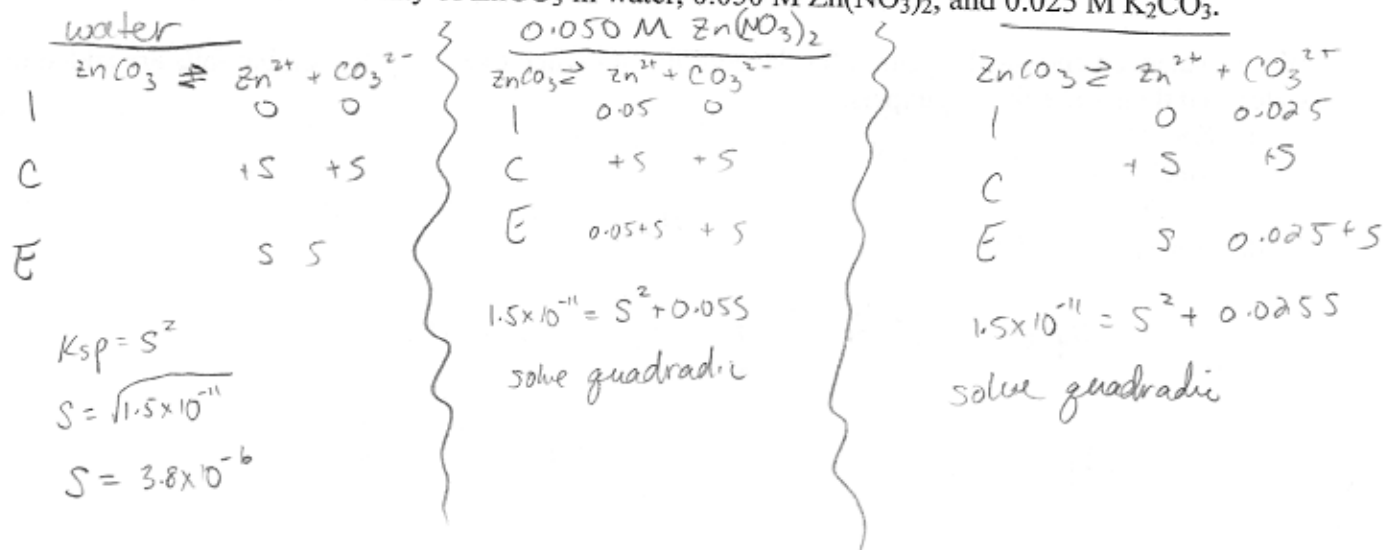


4. What is the molarity of Zn^{2+} ion in a saturated solution of ZnCO_3 that contains 0.25 M Na_2CO_3 ? $K_{sp} \text{ ZnCO}_3 = 1.5 \times 10^{-11}$.



Solve quadratic

5. Calculate the solubility of ZnCO_3 in water, $0.050 \text{ M Zn(NO}_3)_2$, and $0.025 \text{ M K}_2\text{CO}_3$.



6. The K_{sp} of AgCl is 1.8×10^{-10} . The K_f of $[\text{Ag}(\text{S}_2\text{O}_3)_2]^{3-}$ is 2×10^{13} . Is the dissolution of AgCl by complex ion formation a product or reactant favored process?

Ignore - we skipped this topic

7. Will AgCl precipitate from a solution containing $1.0 \times 10^{-5} \text{ M Ag}^+$ and $1.0 \times 10^{-5} \text{ M Cl}^-$?
 $K_{sp} \text{ AgCl} = 1.8 \times 10^{-10}$.

$$Q = (1.0 \times 10^{-5})(1.0 \times 10^{-5}) = 1.0 \times 10^{-10}$$

$Q < K_{sp}$ \therefore precipitate will not form